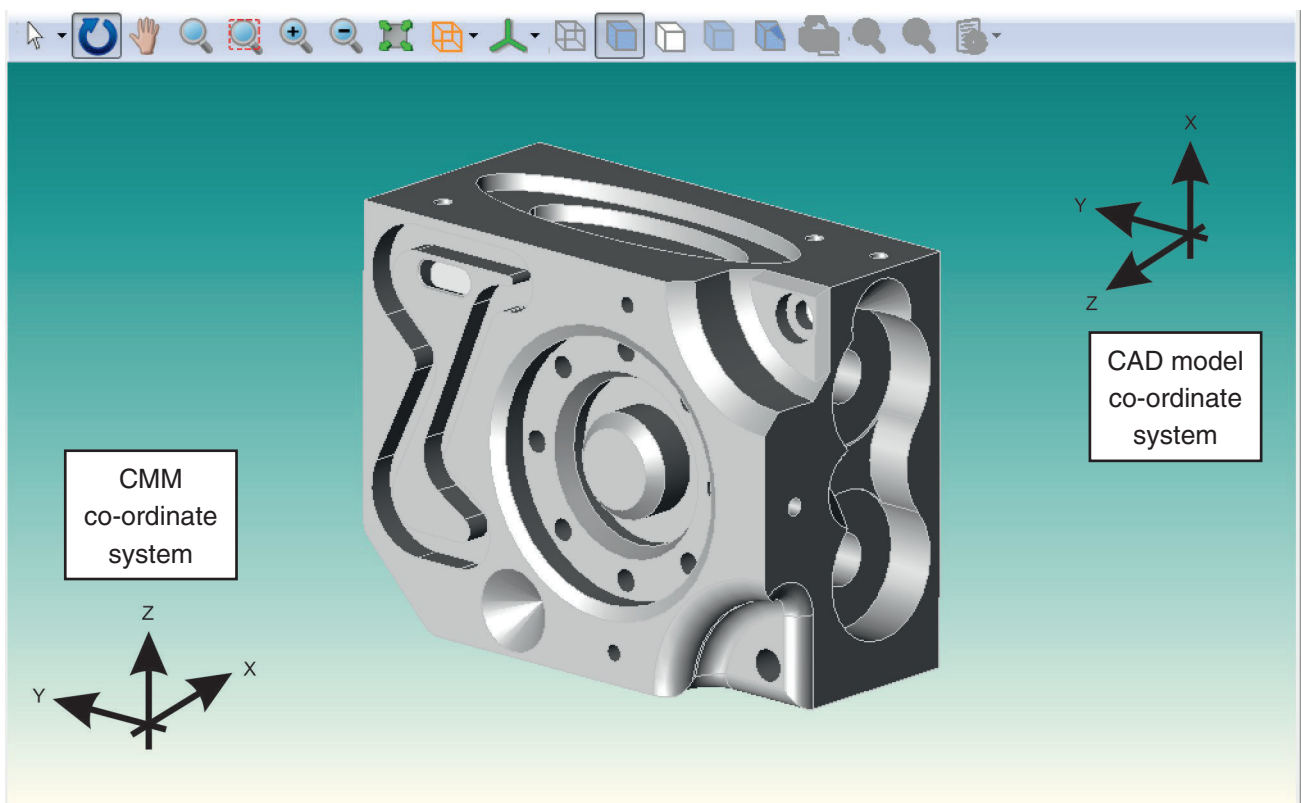


Part alignment using a CAD model (not aligned to machine co-ordinates) (CAD)



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(not aligned to machine co-ordinates)
(CAD)**

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1 Part alignment using a CAD model (not aligned to machine co-ordinates) (CAD)

1.1 Tutorial pre-requisites

- The student should understand 'Principles of part alignment' tutorial
- The student should have a sound knowledge of part alignment methods

1.2 Tutorial objectives

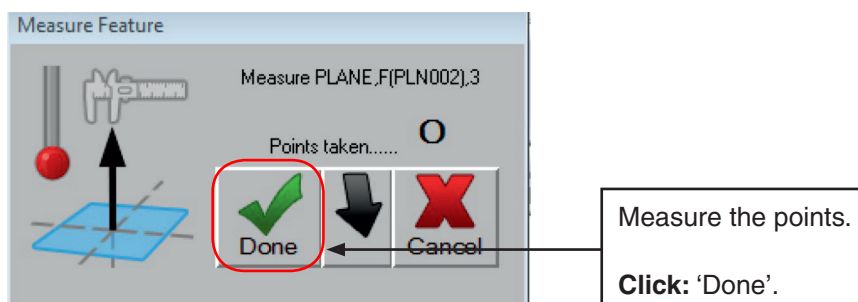
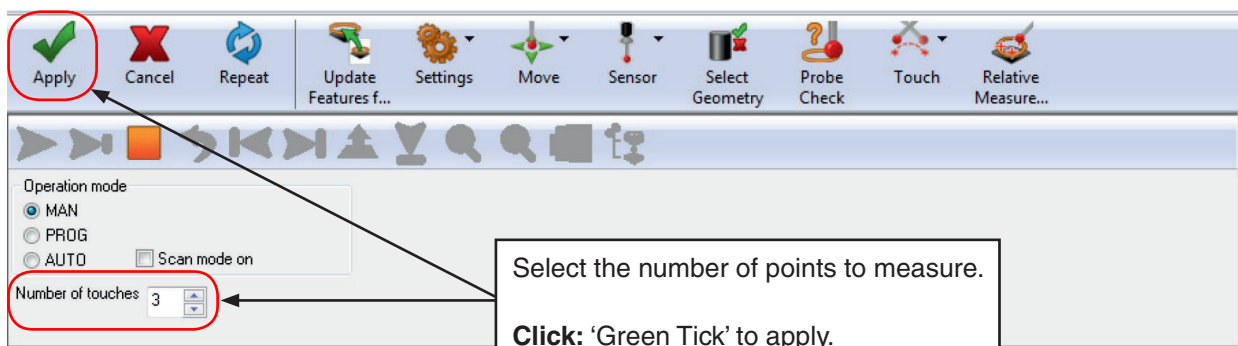
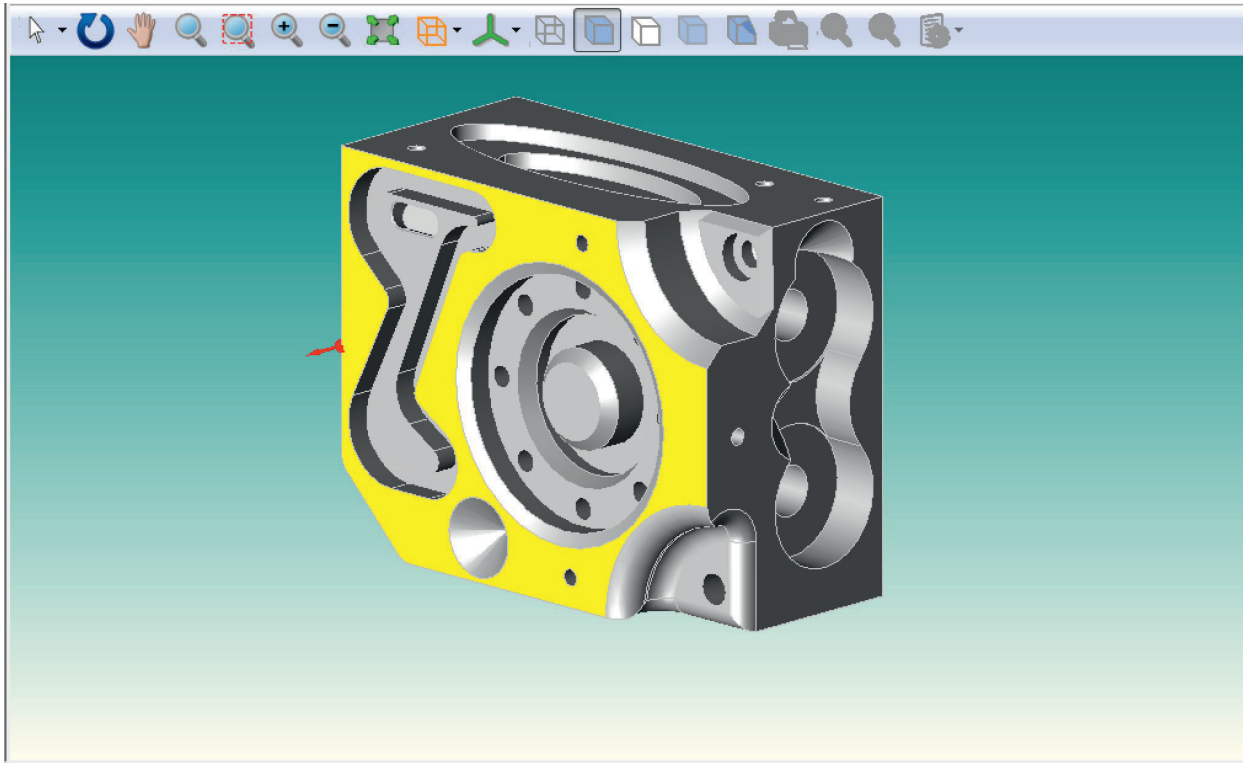
- Further exposure to feature construction
- Understand part alignment considerations, particularly considering the differences between machine, model and target part datums and their respective effects on nominal definitions and tip compensation rules

2 Introduction

In this tutorial, the Renishaw training block will be used to simulate part alignment requirements controlled by a central boss / bore and timing feature (e.g. a rotating part) when the part is not aligned to the machine axes. All features will be defined and visualised using a CAD model.

3 Alignment of a component when the machine and CAD co-ordinates are different

On the computer screen, click on the top face of the CAD model to select it:



When the plane has been measured: select DATUM - ONE AXIS

Click: 'Datum'.

Select: 'One Axis'.

Enter a name in the 'Datum label' box.

Enter a label if required and ensure the measured plane has been selected by the software.

Click: 'Datum'.

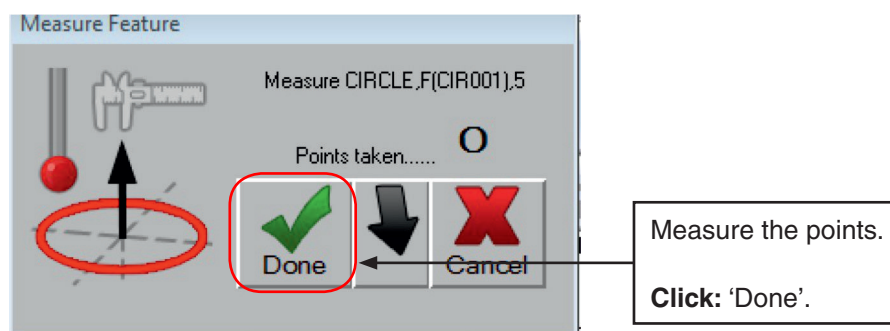
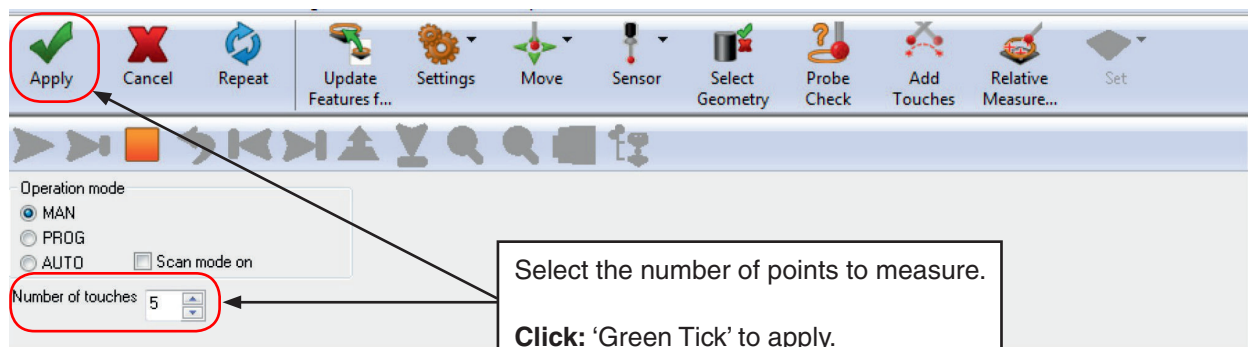
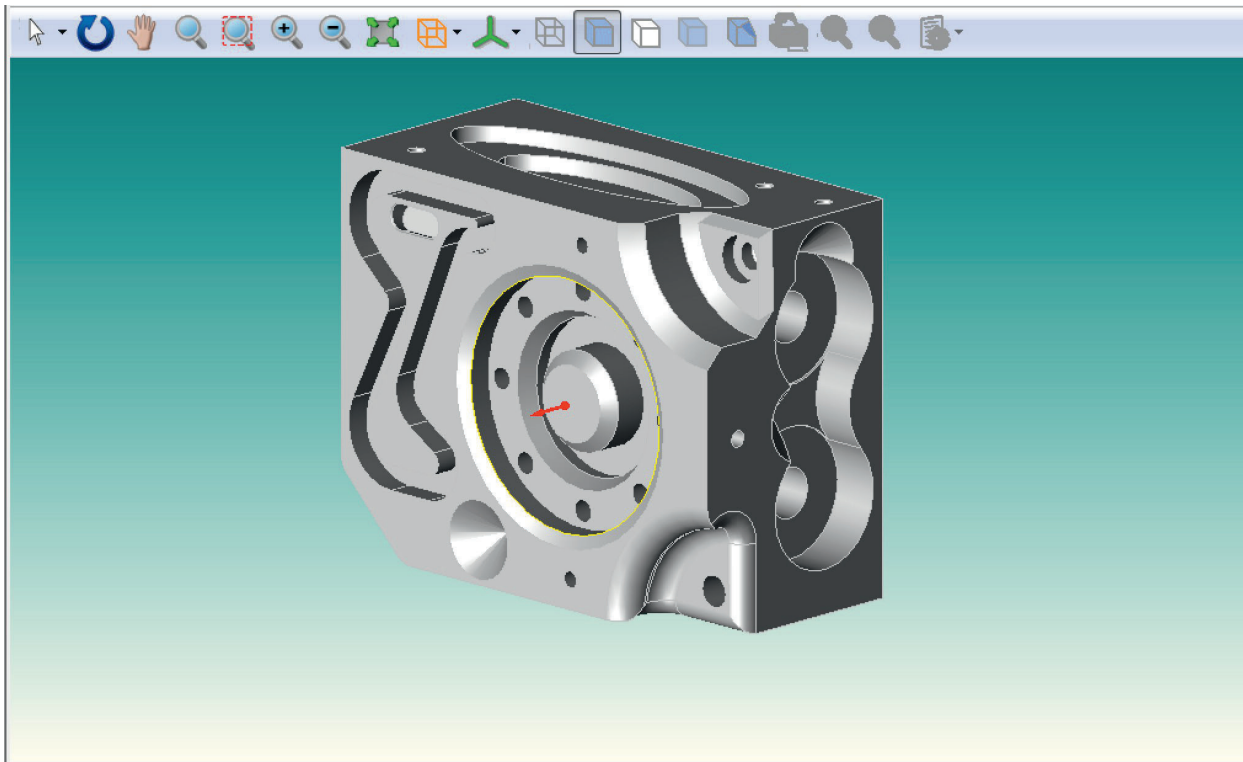
Ensure that the 'Axis' and 'Origin' are set as per the CAD model; independent of the machine co-ordinates

The 'Create Datum' dialog box is shown with the following settings:

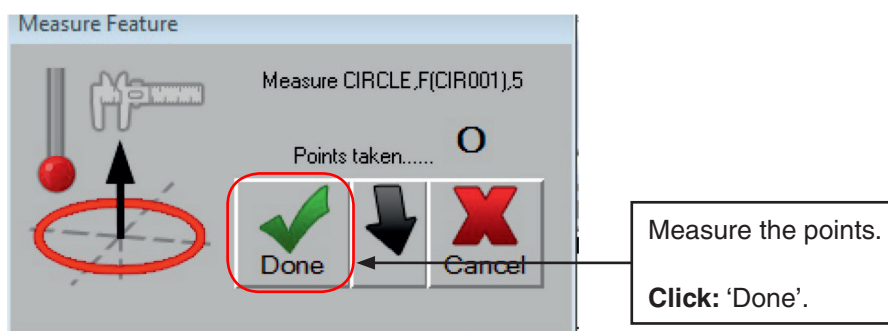
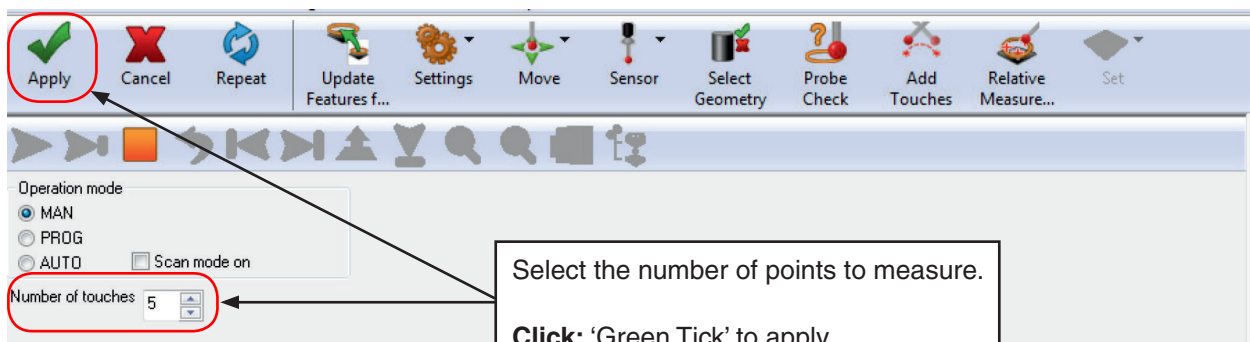
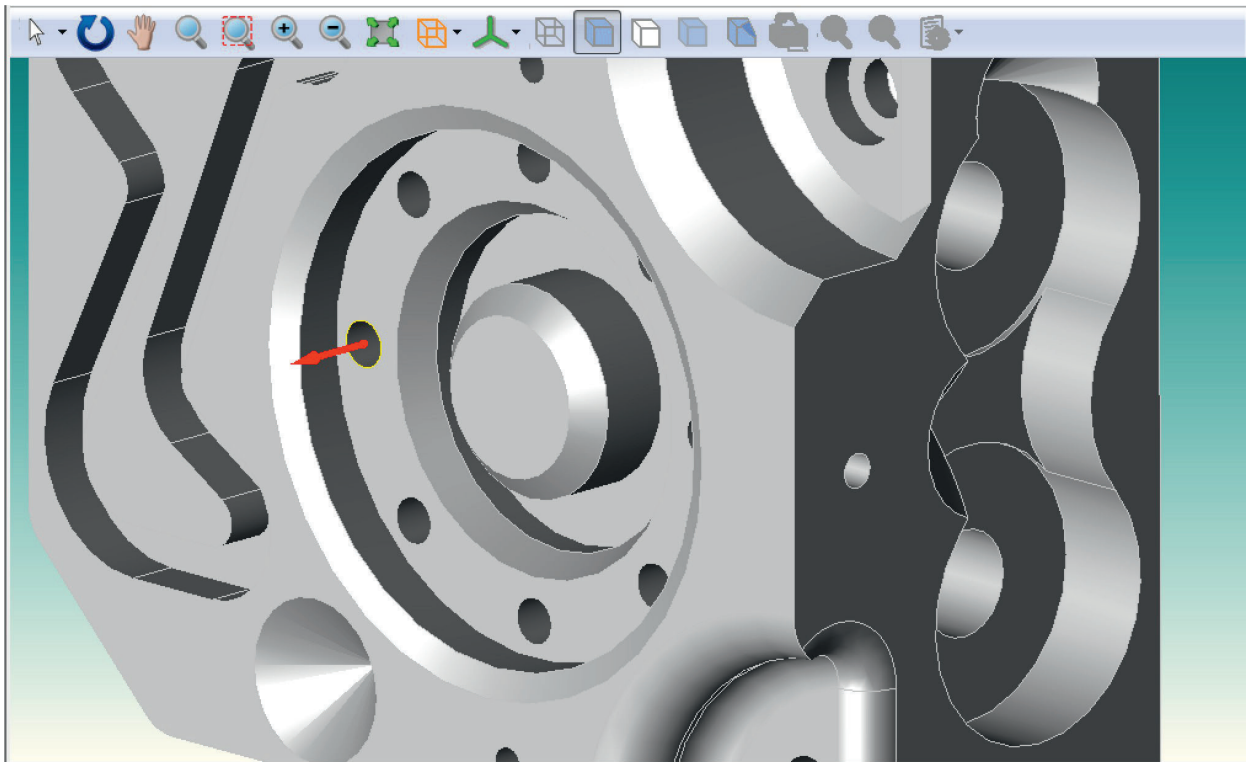
- Datum label:** Top_Face
- Primary:**
 - Label: A
 - Feature: Top_Face
 - Axis: +Z (selected)
 - Origin: Z (checked)
- Secondary:**
 - Label: (empty)
 - Feature: (empty)
 - Axis: (empty)
 - Origin: (empty)
 - ☒ Disabled
- Tertiary:**
 - Label: (empty)
 - Feature: (empty)
 - Axis: (empty)
 - Origin: (empty)
 - ☒ Disabled

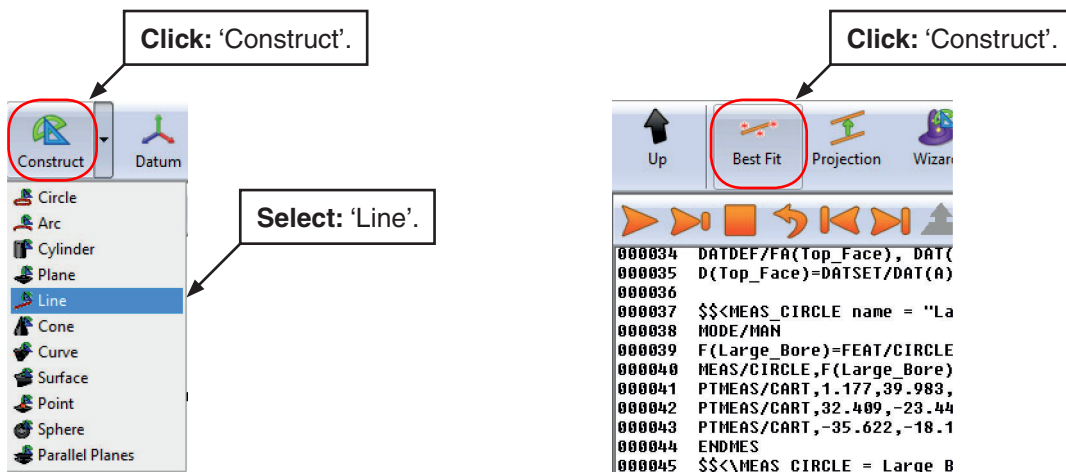
The 'OK' button is highlighted.

On the computer screen, click on the top edge of the large bore to select it:

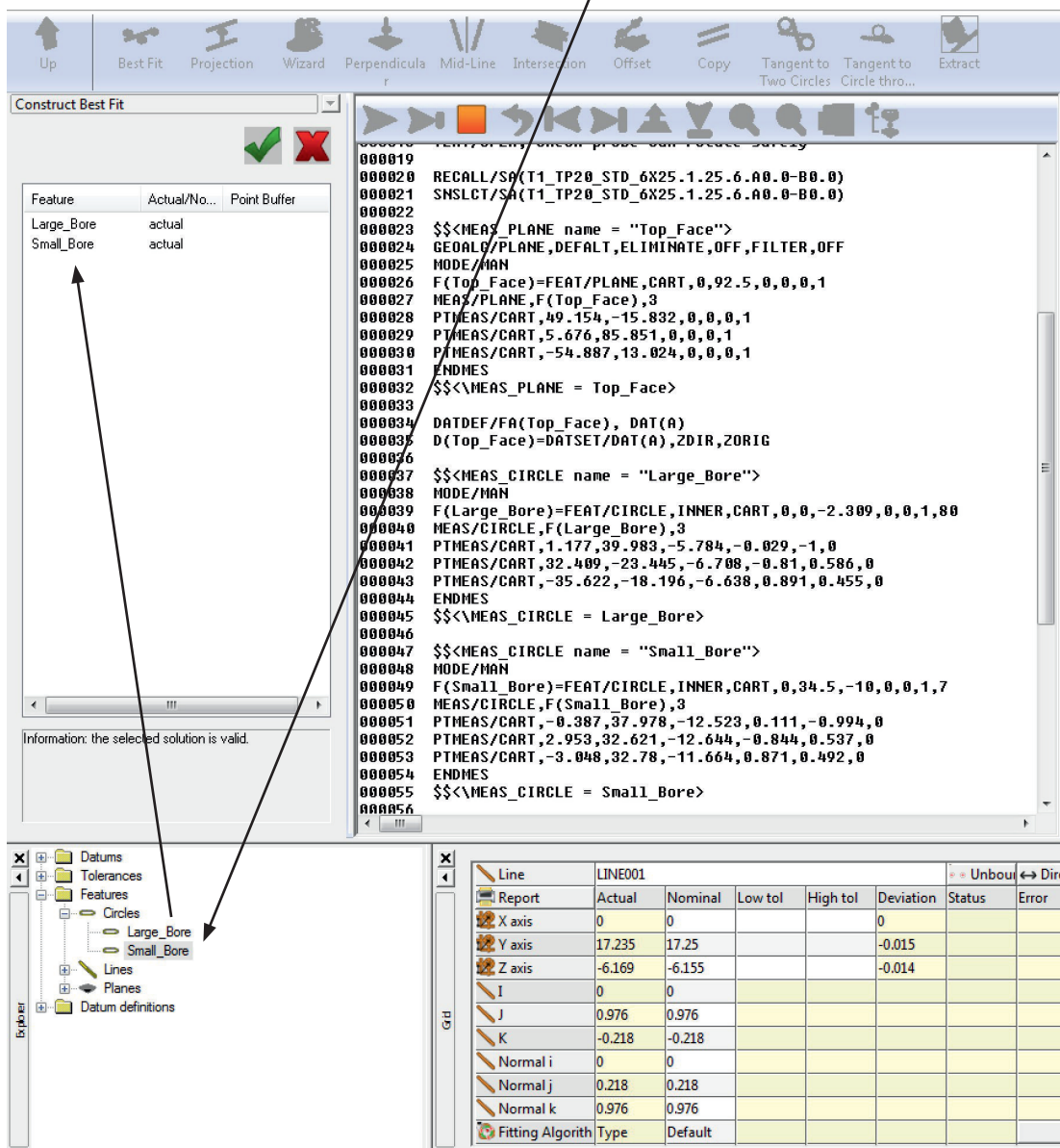


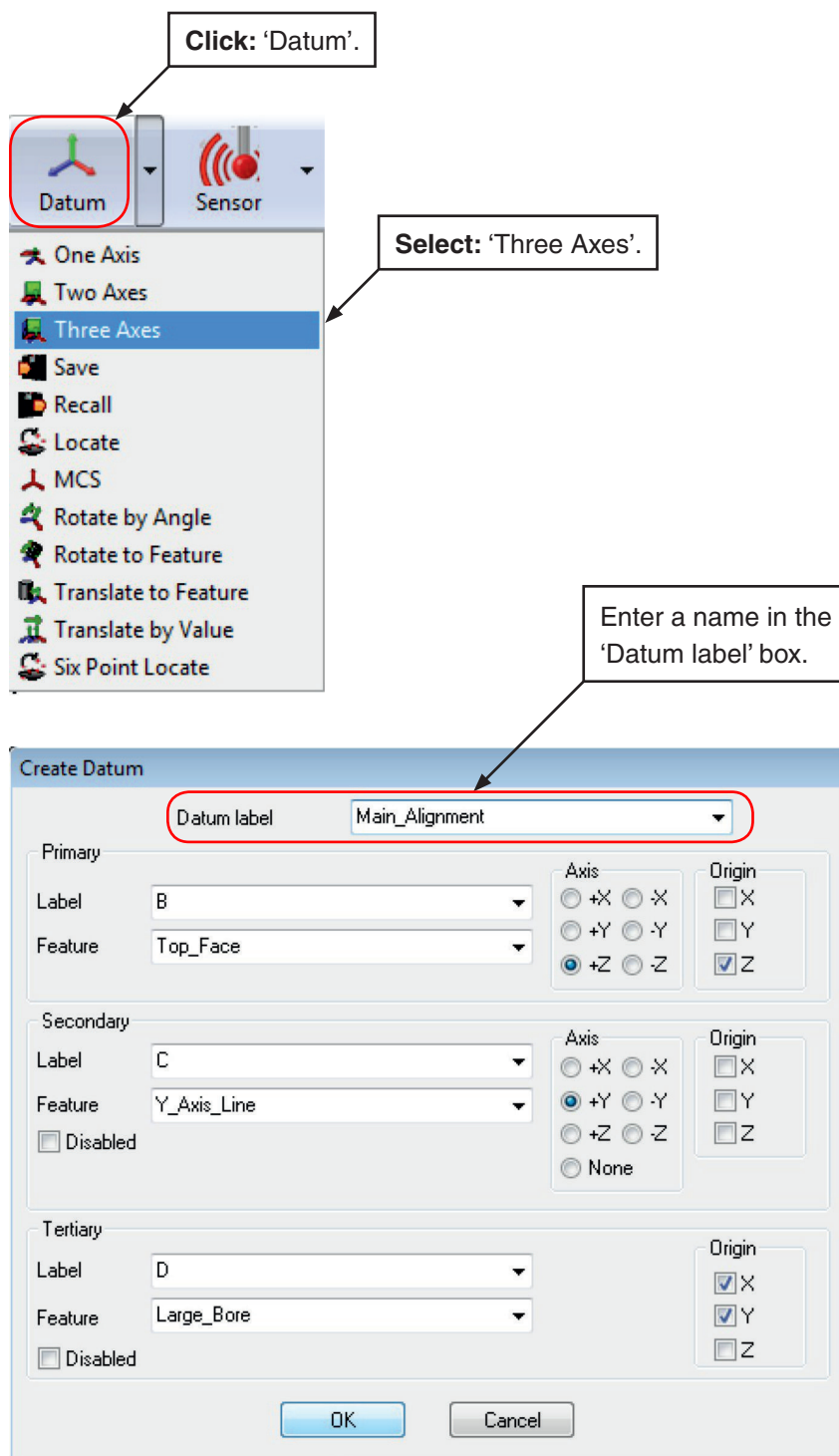
On the computer screen, click on the top edge of the small bore indicated to select it:





When the construction window appears drag the large bore and small bore circles into the construction box. The order these circles are dragged into the box will determine the line vector. In the example shown the vector will run from the large bore to the small bore.





The 'Primary' information should be the same as previously created.

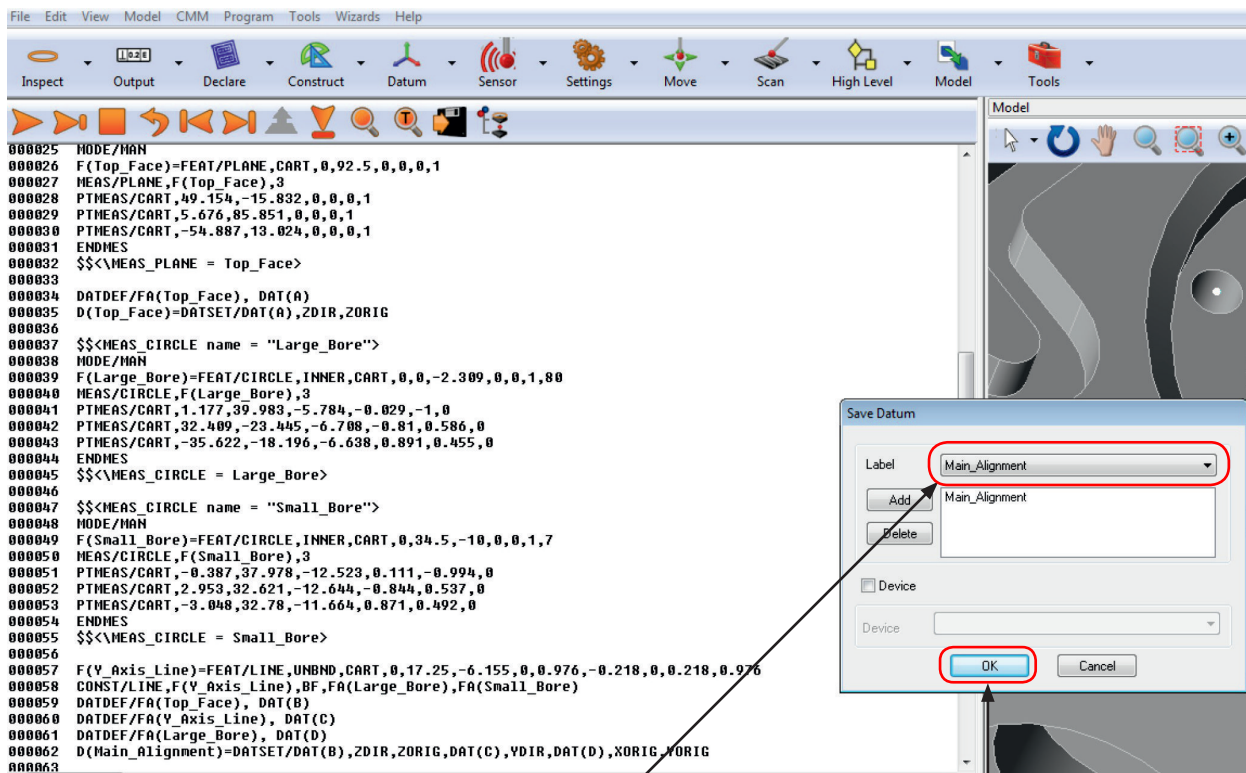
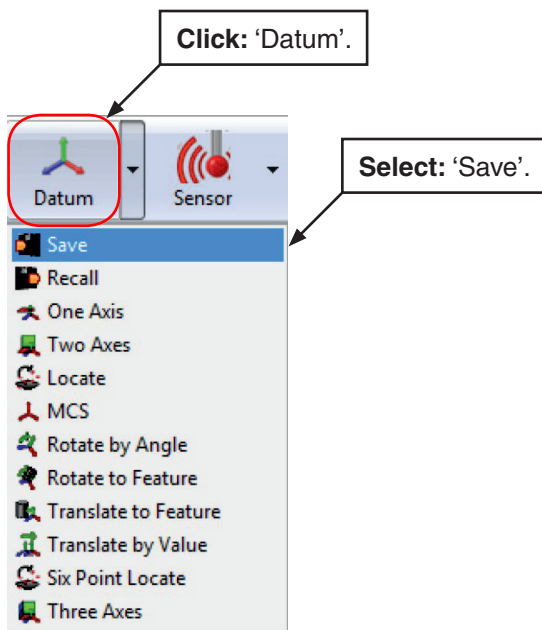
Enter the constructed line into the 'Secondary' feature box. Enter a label name if required.

In this example set the axis to +Y with no origin.

Enter the large bore into the 'Tertiary' feature box. Enter a label name if required.

In this example tick the X and Y origin boxes.

Click OK to continue..

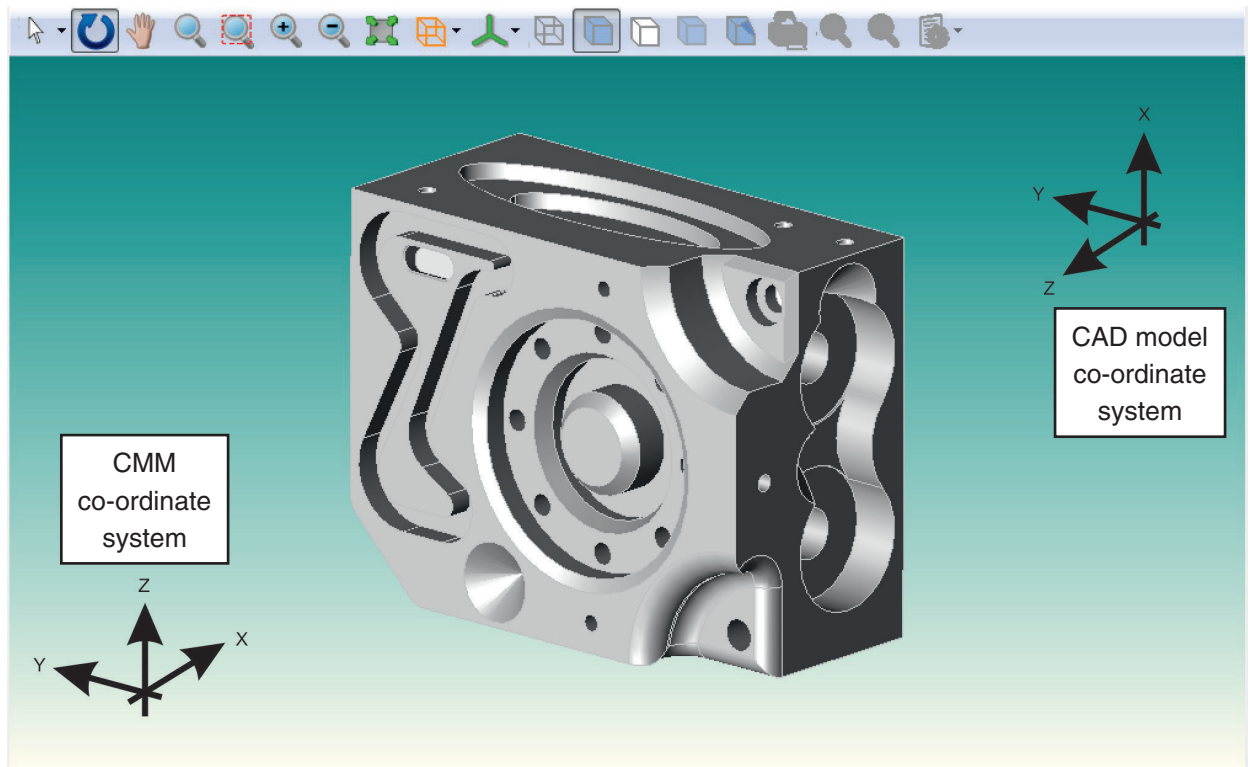


Select the datum from the drop down menu in the 'Save Datum' window.

Click: 'OK' to save the datum.

Manual alignment of the component, located on its side face, has now been completed.

Its co-ordinate system is at 90 degrees to the machine co-ordinate system.



A more precise CNC alignment of the component should now be carried out prior to any measurement being undertaken.

Renishaw plc
New Mills, Wotton-under-Edge,
Gloucestershire, GL12 8JR
United Kingdom

T +44 (0)1453 524524
F +44 (0)1453 524901
E uk@renishaw.com
www.renishaw.com

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**For worldwide contact details,
please visit our main web site at
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